Washington State Patrol

DataMaster Operator Information Manual

Breath Test Section

3000-135-024 (R 1/98)

An internationally accredited agency providing provessional law enforcement services.

Washington State Patrol

DataMaster Operator Information Manual

Breath Test Section

3000-135-024 (01/98)

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION AND BACKGROUND

The need for chemical testing for intoxication was recognized many years ago, but the only available methods were blood and urine tests. These tests were costly, slow, and difficult to obtain.

As this country became more a nation on wheels, the problems which accompany progress increased. One of these problems was the drunk driver. As the charge of driving-while-under-the-influence became more common, attorneys became more familiar with circumstances surrounding intoxication. It became common knowledge that a few pathological conditions can mimic drunkenness. It was possible for a person to exhibit the signs of being under the influence of an intoxicant, by having had one beer (producing the odor on their breath), combined with one of these pathological conditions.

These circumstances led the courts to dismiss many cases of driving-while-under-the-influence because the defense attorney had raised some doubt as to the cause of the symptoms which the defendant was exhibiting. However, there was little dispute in a case, when a blood or urine sample had been taken to substantiate the charge. The value of a chemical test to determine intoxication became apparent. The search for a quick, inexpensive, easily available, and reliable test was started.

The late Dr. R. N. Harger, a well-known professor of biochemistry and toxicology at Indiana University School of Medicine, invented the first device to measure breath alcohol to assess impairment. The first instrument was known as the "Drunkometer" and was based on Henry's Law. Henry's Law states that the ratio between alcohol in the blood and alcohol in the deep lung air is constant. For forensic purposes, the ratio is conservatively defined to be 2100:1. Early breath testing instruments were manually operated and employed wet chemistry methods of testing. These include the Drunkometer and the Breathalyzer, which was invented by Captain Robert Borkenstein of the Indiana State Police. Advances in technology have resulted in the development of automated instruments that employ no external chemicals in the testing procedure. Some of the devices now in use are the Intoximeter, Intoxilyzer, and BAC DataMaster. The BAC DataMaster was developed by Dr. Ing W. K. Adrian, a professor at the University of Waterloo in Ontario, Canada. It is presently marketed by National Patent Analytical Systems Inc., Mansfield, Ohio. The DataMaster is a state of the art, evidentiary, breath test instrument, utilizing infrared technology. It is specific for ethanol and is designed to accept a sample of breath from the deep lung.

Forensic breath tests for intoxication have been conducted since 1936 and their use has spread throughout the country. The standards and use of these tests have been approved by the American Medical Association, the American Bar Association, the National Safety Council, the National Highway Traffic Safety Administration and many others.

The courts have become more dependent upon breath tests and demand better scientific evidence. The use of breath tests to corroborate the arresting officer's observations have resulted in a higher conviction rate in charges of driving under the influence (DUI). Breath testing has the commendable aim of supplying juries with scientific evidence to convict the guilty and exonerate the innocent.

ADMINISTRATION OF THE BREATH TEST PROGRAM

In the State of Washington, only blood and breath testing are approved methods of testing for the presence of alcohol in a subject. Chapter 448-13 of the Washington Administrative Code (WAC) are the rules governing breath testing. These rules cover many aspects of the breath test program. Some of the WACs include approval of the DataMaster as the only breath test instrument, administration of a breath test, the validity and certification of results, and guidelines regarding instructors, operators, solution changers, and technicians.

The following requirements are necessary to ensure accuracy, precision, and confidence in each test.

1. The operator must be a qualified DataMaster operator.
2. There must be a proper 15 minute direct observation.
3. The internal standard must be verified.
4. There must be four blank tests, each with a result of .000
5. The external standard simulator solution temperature must be 34°C +/- .2°C and its value must be between .090 and .110 inclusive.
6. The subject must provide two valid breath samples and they must be within +/- 10% of their average.
7. There must be a printout of the results on a breath test document.

All results are in units of grams of alcohol per 210 Liters of breath (g/210L).

CHAPTER 1

ALCOHOL IN THE HUMAN BODY

ALCOHOL IN THE HUMAN BODY

I. ALCOHOL

A. Types

1. Ethyl Alcohol

a. Type of alcohol in intoxicating beverages

2. Methyl Alcohol

a. Produced from wood products

b. Highly toxic; affects the optic nerve

3. Other types of alcohol

a. Amyl, Isopropyl, Butyl, etc.

B. Proof system

1. 200 proof is pure alcohol (absolute alcohol)

2. Proof is twice the percentage by volume

a. To determine the percentage of alcohol, divide the proof by two.

b. Beer and wine use percentage; hard liquor uses proof system.

3. Percentages may be by weight or volume

a. Alcohol percentages can be converted between weight and volume using the specific gravity of alcohol. The specific gravity of alcohol is 0.789. (Example: [4% by Volume]*[0.789] = 3.2% by Weight)

II. EFFECTS OF ALCOHOL

A. Alcohol is a depressant

1. Alcohol acts as an anesthetic
2. Alcohol is a nerve depressant. It seems to stimulate, but it depresses the higher nerve centers and removes inhibitions.

B. Alcohol can be toxic

1. Elevated concentrations in the blood can interfere with vital bodily functions, such as respiration.

2. Vomiting during periods of unconsciousness can cause death by choking.

C. Order of effects (see Table 1 on page 1-3)

1. Highest orders of learning are the first affected

a. Disinhibition: Those "social brakes", or restraints, which make us conform to a pattern of behavior which society has deemed proper, are suppressed.

b. Judgment: Critical thinking is impaired, and impulse control becomes weakened.

c. Reaction: Reaction times are slowed, and reactions can be inappropriate.

d. Coordination: Both fine motor skills (manual dexterity) and gross motor skills (balance, speech, tracking) become impaired.

2. Vital functions are affected last.

a. Vital functions are involuntary reactions.

(1) Breathing

(2) Digestion

(3) Heart action

D. A breath test concentration of about 0.50 g/210L will usually result in death, although death can occur at levels as low as 0.39 g/210L and some subjects have survived breath test concentrations as high as 1.20 g/210L.

1. National Safety Council recommends that with any breath test result of .25 g/210L or higher, wait 30 minutes and give another breath test. If it is higher than the first, give the subject an opportunity to seek medical attention.

Table 1 - Stages of Acute Alcoholic Influence/Intoxication[1]

Ethyl Alcohol Level Percent by Weight Blood	Stage of Alcoholic Influence	Clinical Signs/Symptoms
0.01 - 0.05	Sobriety	No apparent influence Behavior nearly normal by ordinary observation Slight changes detectable by special tests
0.03 - 0.12	Euphoria	Mild euphoria, sociability, talkativeness Increased self-confidence; decreased inhibitions Diminution of attention, judgment, and control Loss of efficiency in finer performance tests
0.09 - 0.25	Excitement	Emotional instability; decreased inhibitions Loss of critical judgment Impairment of memory and comprehension Decreased sensitory response; increased reaction time Some muscular incoordination
0.18 - 0.30	Confusion	Disorientation, mental confusion; dizziness Exaggerated emotional states (fear/anger/grief/etc.) Disturbance of sensation (diplopia, etc.) and of perception of color, form, motion, dimensions Decreased pain sense Impaired balance; muscular incoordination; staggering gait, slurred speech
0.27 - 0.40	Stupor	Apathy; general inertia, approaching paralysis Markedly decreased response to stimuli Marked muscular incoordination; inability to stand or walk Vomiting; incontinence of urine and feces Impaired consciousness; sleep or stupor
0.35 - 0.50	Coma	Complete unconsciousness; coma; anesthesia Depressed or abolished reflexes Subnormal temperature Incontinence of urine and feces Embarrassment of circulation and respiration Possible death
0.45 +	Death	Death from respiratory paralysis

[1]Adopted from : Kurt M. Dubowski, Ph.D., FAIC, Director, Department of Clinical Chemistry and Toxicology, University of Oklahoma, School of Medicine, Oklahoma City, Oklahoma, Member, Committee on Alcohol and Drugs, National Safety Council.

III. HOW THE BODY HANDLES ALCOHOL

A. Distribution in the body

1. Usually swallowed and passed through the esophagus to the stomach.

2. Alcohol begins to be absorbed into the blood as soon as it enters the body.

   a. Any wet tissue will absorb alcohol.

   b. A small amount is absorbed through the mouth and esophagus tissue.

3. The stomach absorbs some of the alcohol.

   a. Up to 20 percent of the alcohol will be absorbed by the stomach.

   b. The stomach contents will somewhat determine the rate of absorption.

   c. Greasy or fatty foods tend to slow the rate of absorption.

   d. The function of the stomach is to get food or alcohol into a condition where it can be absorbed into the blood.

      (1) Most alcohol passes into the blood stream without being digested.

4. Alcohol passes from the stomach to the small intestine, where most of the alcohol is absorbed into the blood stream.

   a. One function of the small intestine is to put nutrients (including alcohol) into the blood stream.

   b. Alcohol is absorbed very rapidly through the small intestine.

      (1) In most individuals, all of a large dose of alcohol ingested at any one time will be absorbed within 90 minutes. Smaller amounts are absorbed more quickly.

   c. About 80 percent of the alcohol consumed gets into the blood

stream through the small intestine.

5. Alcohol is carried by the blood stream to all parts of the body.

   a. Alcohol is found in all parts of the body in direct proportion to the water content.

   b. Those parts of the body rich in water will be rich in alcohol (blood, urine, liver, etc.).

6. The alcohol which reaches the brain and higher nerve centers produces the intoxicating effect.

   a. We are not affected by alcohol present in other parts of the body.

7. The blood stream carries alcohol to the liver.

   a. The liver oxidizes or burns up alcohol.

      (1) It metabolizes the alcohol by enzyme action (alcohol dehydrogenase) to acetic acid and then to carbon dioxide and water.

   b. The liver oxidizes approximately one-third of an ounce of pure alcohol per hour. In most individuals, their alcohol concentration would decrease between 0.010 and 0.030 g/210L per hour.

   c. About 96 percent of the alcohol consumed is oxidized by the liver.

   d. Only about 4 percent of the alcohol leaves the body through the bodily wastes (such as urine, sweat, saliva, breath, etc.).

8. Alcohol is carried by the blood stream to the network of blood vessels which surround the lungs.

   a. In the alveolar section of the lungs, the blood vessel walls are so thin that the air in these sacs is virtually in contact with the blood.

   b. The air in the alveolar sacs will take on alcohol according to Henry's Law.

(1) Henry's Law is a physical law that defines the relationship between the concentration of a volatile material in solution and the concentration of that material in the air in contact with the solution. This is temperature dependent. Here, the solution is the blood and the volatile material is the alcohol.

(2) Body temperature is almost constant, so the amount of alcohol taken on by the air in the alveolar sacs will be in constant proportion to the alcohol in the blood.

(3) For forensic purposes, the proportion 2100:1 is usually accepted. This means that the concentration of alcohol in the blood would be 2100 times that of the concentration of alcohol in the end expiratory air leaving the mouth.

B. Factors Affecting the Extent of Intoxication

1. Amount consumed

2. Absorption rate -- The rate at which the alcohol gets into the blood stream (Figure 1, page 1-8)

3. Elimination rate -- The rate at which the body rids itself of alcohol (Figure 1, page 1-8)

4. Tolerance

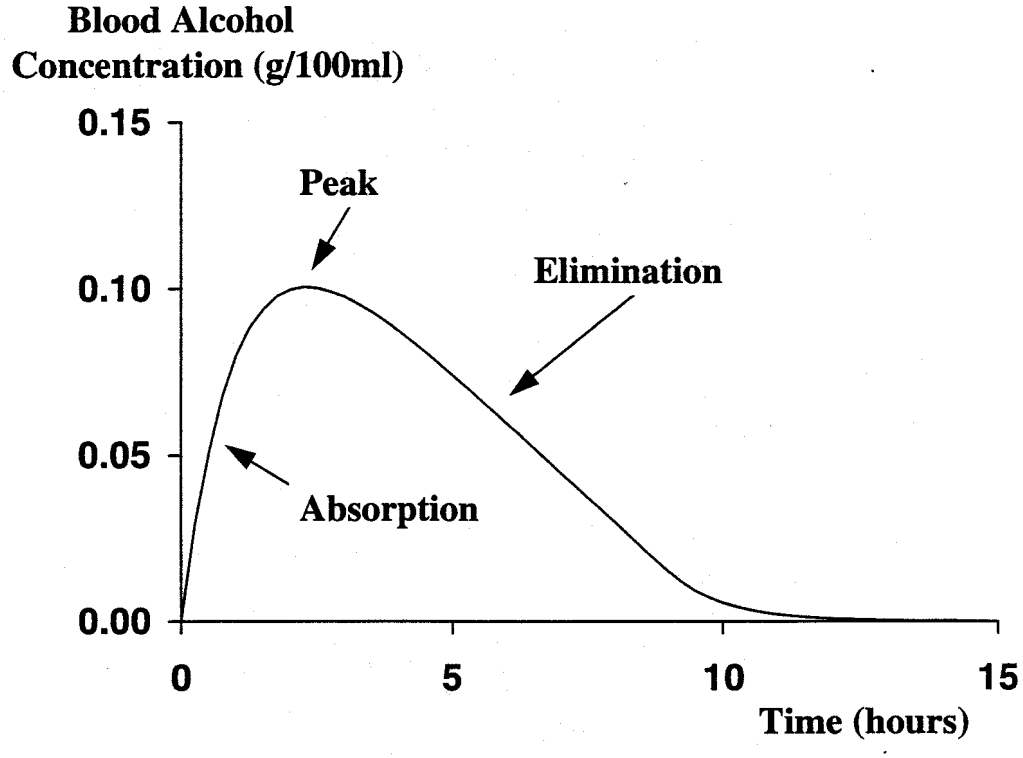
a. "Consumption tolerance" -- Built up over a period of years through continued use of alcohol.

b. "Native tolerance" -- Some people are born with the ability to handle alcohol better than others.

5. Theoretically, an individual who had a slow absorption rate, a fast elimination rate, and a high consumptive and native tolerance, would have a body physiologically able to better withstand alcohol abuse.

However, it must be remembered that even this ideal type of drinker will be affected by alcohol when they reach a concentration of .10 g/210L of breath and they will be unsafe to drive a motor vehicle.

Figure 1 - The General Widmark Alcohol Concentration Time Curve



CHAPTER 2

INSTRUMENTATION

INSTRUMENTATION

The DataMaster is a forensic breath testing device which measures ethanol (commonly termed "alcohol") and is based on principles of infrared spectroscopy. This automated instrument accurately determines the amount of alcohol in deep lung air at the time the breath test is administered. Breath alcohol concentration (BrAC) is directly proportional to blood alcohol concentration (BAC). This is an established scientific truth of great benefit in law enforcement. BrAC and BAC need not be compared, since both are equally reliable and established measures of intoxication.

Following recommendations by the National Safety Council's Committee on Alcohol and Other Drugs, the Department of Transportation established a conservative standard to legally define alcohol impairment while operating a motor vehicle. This standard is .10 grams of alcohol per 210 liters of breath (g/210L). At this level of intoxication, there is well-founded agreement that any individual will be too impaired to drive safely. It is important to remember that an arrest is not made on th e basis of a breath test alone. It also depends on other factors, such as weaving on the roadway, odor of intoxicants, physical tests, and all those observations that give you probable cause to believe the driver was under the influence of alcohol and/or drugs.

We first need to discuss a few basic principles on which the instrument depends. Infrared spectroscopy is a technique used to quantify the extent of interaction between infrared light and molecules of matter. The term infrared describes a particular range of electromagnetic radiation (Figure 2, page 2-3), which is characterized by either its wavelength or energy content. Wavelength and energy content are inversely related. As the wavelength of electromagnetic radiation increases, the energy content of electromagnetic radiation decreases. Conversely, as the wavelength decreases, the energy content increases. Near infrared light has more energy than far infrared light. Infrared energy falls just below the red end of the visible light spectrum and contains less energy.

A molecule of ethanol (Figure 3, page 2-4) consists of six hydrogen atoms, two carbon atoms, and one oxygen atom (arranged in a fixed order). When infrared light is absorbed by a particular molecule, the distance between atoms will vary or oscillate in a regular way, according to the wavelength of infrared energy absorbed. The amount of infrared light absorbed by a substance at a specific wavelength is defined as absorbance. A graph of absorbance versus wavelength for a chemical substance is known as an absorption spectrograph or absorption spectrum. The absorption spectrum for ethanol (in the infrared region of the electromagnetic spectrum) is shown in Figure 4 on page 2-5. Not all wavelengths of infrared light are equally absorbed by a chemical substance. This is to our benefit because most drugs of forensic concern have a unique infrared absorption spectrum, a "fingerprint", which can be used for chemical identification.

Another scientific principle used by the DataMaster is the Beer-Lambert Law. This mathematical principle states that the amount of light absorbed by a substance is directly proportional to its concentration. Infrared light is absorbed by ethanol. The number of ethanol molecules in a fixed

pathlength can be determined by the intensity of the infrared light absorbed at a particular wavelength. The DataMaster uses two wavelengths of infrared light (3.37 and 3.44 μm) to achieve specificity for the analysis of breath alcohol. While many organic compounds absorb infrared radiation at both of these wavelengths, no compound consistent with normal human breath will have the same absorption ratio as ethanol. The two wavelengths of infrared light are shown in Figure 4 on page 2-5.

The breath sample enters the sample chamber of the DataMaster where an infrared beam of light interacts with any ethanol present (Figure 5, page 2-6). At the same time, minimum exhalation time, breath flow, and changes in BrAC are being automatically monitored, ensuring a valid sample is obtained. The sample chamber of the DataMaster is maintained at a temperature to prevent condensation. Once the sample has been accepted, it is checked for interfering substances. If the absorption ratio of the breath sample falls outside specifications, the DataMaster's display registers the presence of an interfering substance. This avoids misidentifying acetone as ethanol.

Figure 6 on page 2-7 is a photograph of the DataMaster. To operate the DataMaster, the officer pushes the RUN button and follows the instructions on the display. The subject is required to provide two valid breath samples. A new mouthpiece must be used with each breath sample. After the completion of the breath test, the operator will receive a printed document showing the test results.

Figure 2 - The Electromagnetic Spectrum

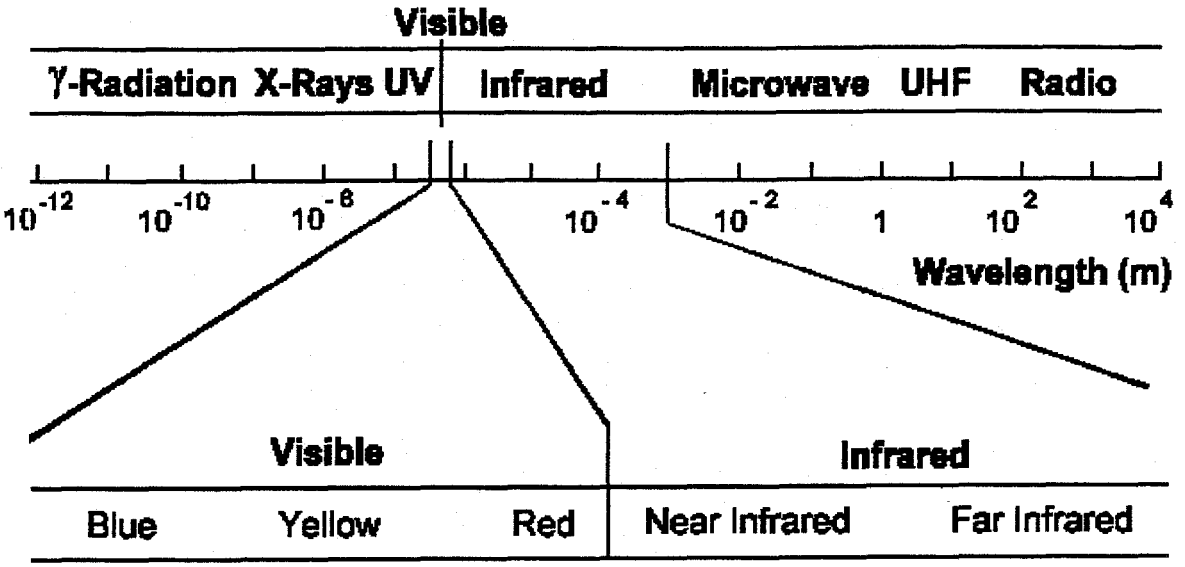


Figure 3: Ethanol Molecule

C = CARBON
H = HYDROGEN
O = OXYGEN

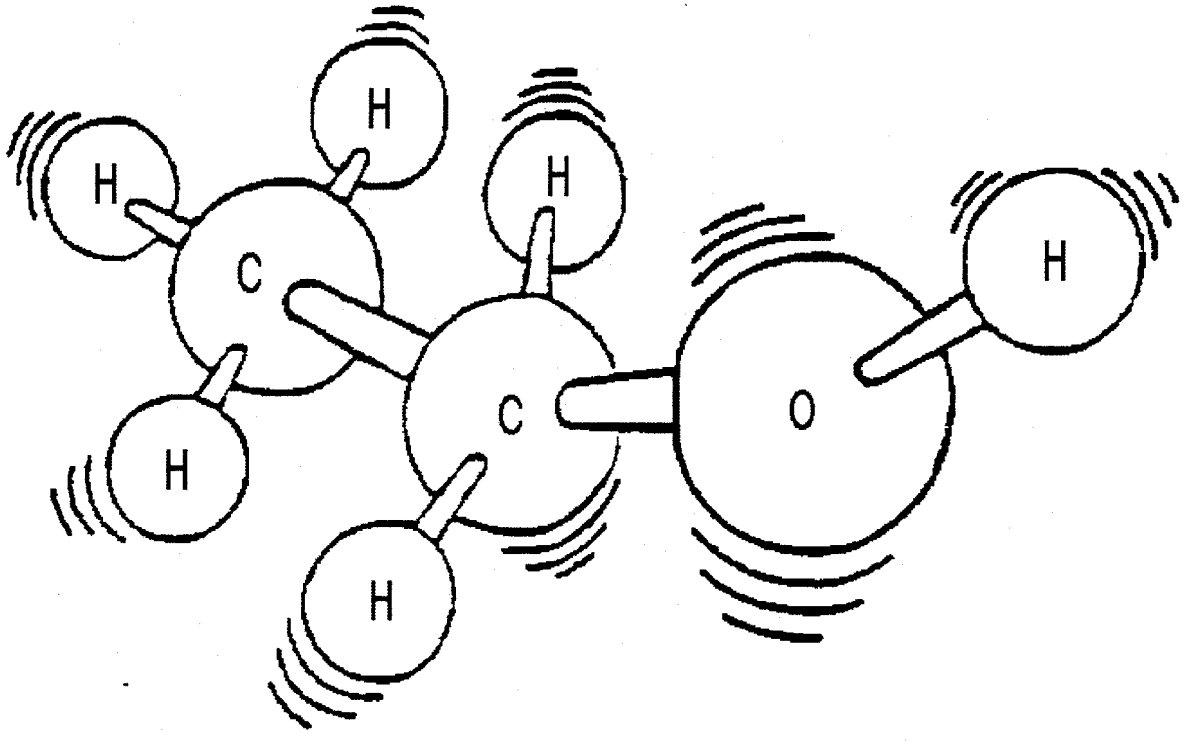


Figure 4 - Infrared Spectrum of Ethanol

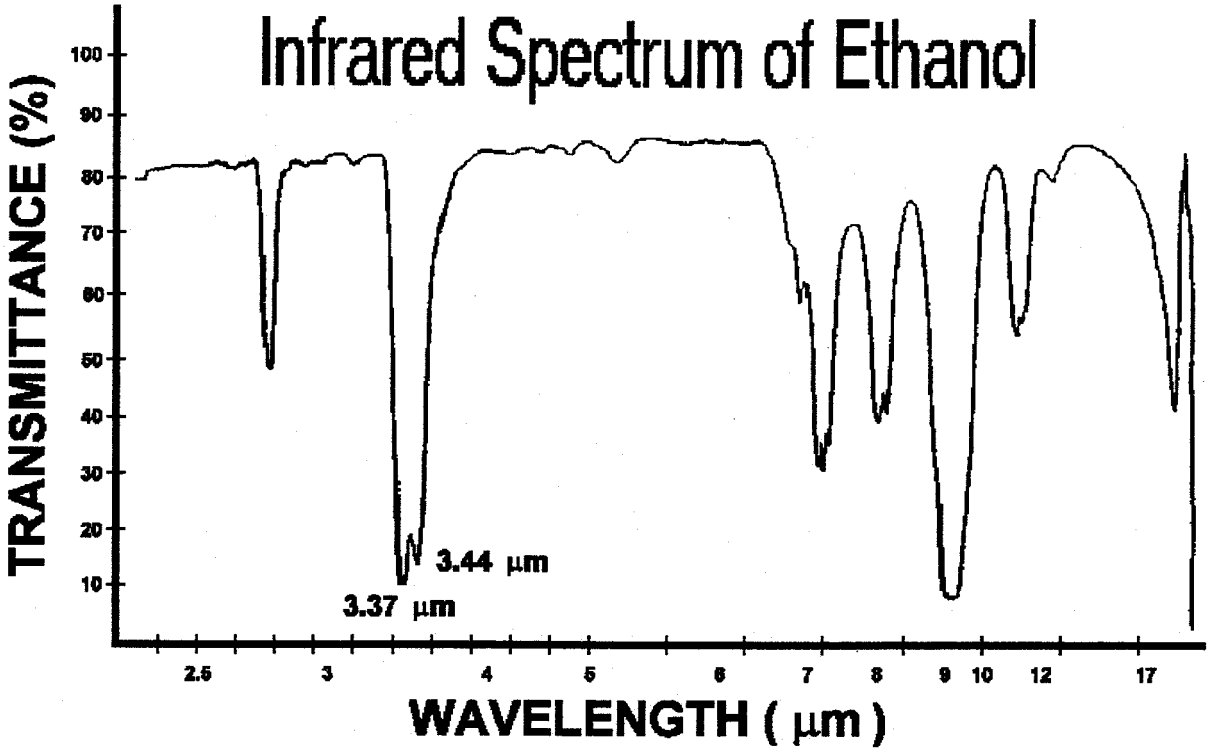


Figure 5 - Schematic Diagram of DataMaster

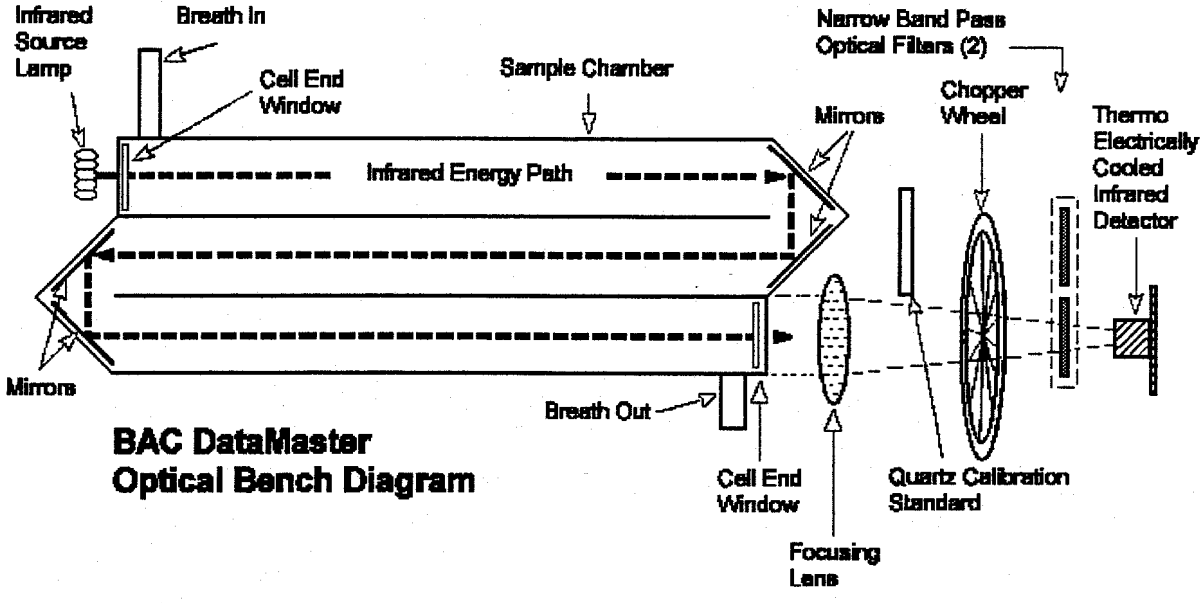
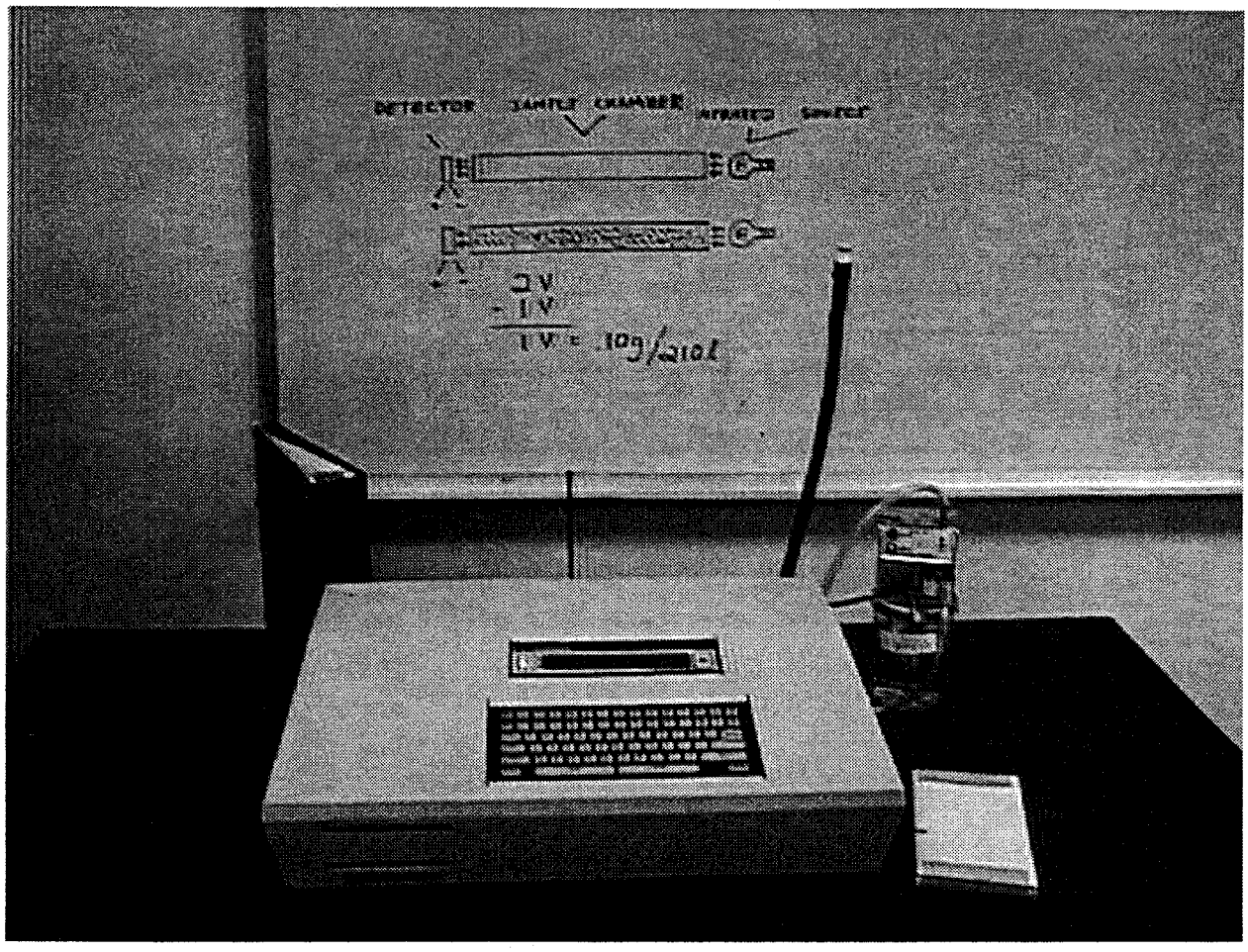


Figure 6 - Photograph of DataMaster



CHAPTER 3

STEPS OF OPERATION

STEPS OF OPERATION FOR THE DATAMASTER

Step 1: Confirm power (via display) to DataMaster is on. Always leave instrument on.

Step 2: Check subject's mouth for food, gum, tobacco, or any foreign objects. Remove any objects and record the time of this examination using the time on the DataMaster. Begin the 15 minute observation period. When the observation time is entered, the instrument will automatically calculate if the 15 minute observation time is complete.

Step 3: Confirm the simulator is on, the paddle is turning, and the temperature is 34°C +/- .2°C. Check that the breath tube is warm or hot to the touch.

Step 4: The DataMaster will display the date, time, "READY," and a flashing "PUSH RUN." At the conclusion of the 15 minute observation period, push the RUN button. The instrument will display:

"INSERT TICKET"

Insert the evidence ticket in the lower slot, face down, notch to the right.

Step 5: The DataMaster will then sequentially display 15 questions which pertain to the subject and the circumstances of his/her arrest. (Refer to Chapter 4)

a. Use the keyboard to type in answers (data) to these questions.

b. To correct typing errors in the entry mode refer to Table 2 on page 4-1 for a summary of data correction in the entry mode.

c. After determining that the answer is correct, press the ENTER/RETURN key to advance the display to the next question.

Step 6: After answering the last question, press the RETURN key. The instrument will display:

"REVIEW DATA (Y/N)?"

a. If you want to review the data, type Y for yes. The first question will reappear, along with the answer you typed.

(1) If the data is correct, press the RETURN key to continue.

(2) To correct typing errors in the review mode, refer to Table 2 on page 4-1 for

a summary of data correction in the review mode.

NOTE: When reviewing data, only the letter/number in the cursor can be changed. Moving the cursor does not erase data. Once the cursor is positioned above the letter/number to be corrected, type in the correct character.

(3) When you have finished reviewing the data, the instrument will again display:

"REVIEW DATA (Y/N)?"

b. If all data is correct, type N for no. The DataMaster will begin the breath test sequence.

Step 7: The instrument will sequentially display the following:

a. PURGING - Room air is being drawn through the breath tube and sample chamber.

b. AMBIENT ZEROING - Setting of the internal optics in the sample chamber to zero.

c. BLANK TEST - A check of the sample chamber for contaminants.

d. INTERNAL STANDARD CHECK - A check of the Quartz Plate to ensure the DataMaster is calibrated properly.

Step 8: The DataMaster then displays:

"SUBJECT REFUSE (Y/N)?"

a. If subject consents to the breath test, type N for no, it is not a refusal. Proceed to Step 9.

b. If the subject refuses to provide a breath sample, type Y for yes, the subject refused. The printed evidence ticket will document the refusal and the breath testing sequence automatically ends.

Step 9: If the subject has consented to the breath test, the display now flashes:

"PLEASE BLOW"

Insert the mouthpiece in the breath tube.

a. Each mouthpiece is in its own plastic bag. Open one end of the plastic bag. Remove and save the bag. Use the plastic bag to avoid touching the mouthpiece as you firmly insert the mouthpiece in the breath tube.

b. At this time, instruct the subject to provide a continuous, moderate, breath sample through the mouthpiece. As the subject complies, the words "PLEASE BLOW" become steady and you will hear a humming/buzzing signal. The subject must continue to blow for 10 to 15 seconds and you will tell them when to stop. The instrument then accepts the sample and the instrument will display

"ANALYZING"

d. Other considerations

(1) If after two minutes, the subject has not furnished an accepted breath sample, the instrument will display:

"SUBJECT REFUSE (Y/N)?"

(a) If the subject refused to provide an accepted breath sample, type Y for breath test refusal. The printed evidence ticket will document the refusal and the breath-sampling sequence automatically ends.

(b) If the subject has made an earnest attempt to furnish a valid breath sample, but it is not accepted by the instrument, type N for not a refusal. The printed evidence ticket will document the incomplete test.

© To determine if the instrument is not taking the sample or the subject is not providing a proper sample, the operator, at their discretion, may perform a breath test on the instrument using his/her own breath. Retain a copy of the breath ticket for later proceedings.

(2) If the breath sample provided is not valid, the instrument will display:

"INVALID SAMPLE"

No evidence ticket is printed and all of the data is erased. The operator must recheck the mouth and wait another 15 minute observation period before restarting the test. Enter the new observation time when restarting the test.

(3) If an interfering substance is present in the breath, the instrument will display:

"INTERFERENCE DETECTED"

The DataMaster will stop the test. Run a second test. If it also displays "Interference Detected", invoke Implied Consent for Blood.

Step 10: Remove the mouthpiece from the breath tube by first covering it with its original plastic bag and dispose of both as soon as the sample has been accepted.

NOTE: After the instrument displays "ANALYZING" it will sequentially display:

"PURGING"
"AMBIENT ZEROING"
"BLANK TEST"
"EXTERNAL STANDARD"

The DataMaster then automatically tests a sample of the external standard. The external standard is in the simulator, which is connected to the DataMaster. The purpose of the external standard is to provide a known alcohol concentration standard. Since the external standard must read within .090 - .110 g/210L, inclusive, the DataMaster is shown to be in proper working order for every subject test, when the expected results are obtained. The instrument then displays:

"ANALYZING"
"TEST RESULTS ALCOHOL ... (three digits)"

a. If the external standard is less than .090 or greater than .110 g/210L, then the instrument automatically stops the test.

(1) Check to be sure the simulator is on. If off, turn on and wait approximately 10-15 minutes for it to warm up. If the temperature is correct, run the test.

(2) If the simulator is on, there is another reason the value is out of range which you cannot correct, you must go to another instrument for testing.

(a) Tag the instrument out of service.

(b) Report external standard out of tolerance to WSP radio.

After the external standard value has been displayed, the instrument will display:

"PURGING"

"AMBIENT ZEROING"
"BLANK TEST"

Step 11: After "BLANK TEST," the instrument displays:

"SUBJECT REFUSE (Y/N)?"

At this point, repeat Step 8 and Step 9 to obtain the second breath sample. Obtain a sample similar to the first sample. Discard the used mouthpiece as soon as the sample has been accepted. The DataMaster will display:

"ANALYZING"
"PURGING"
"AMBIENT ZEROING"
"BLANK TEST"

The evidence ticket will then advance through the upper slot and be printed. Remove the ticket after the printer has stopped.

NOTE: The evidence ticket (Figure 7, page 3-6) is printed in triplicate. It is intended that:

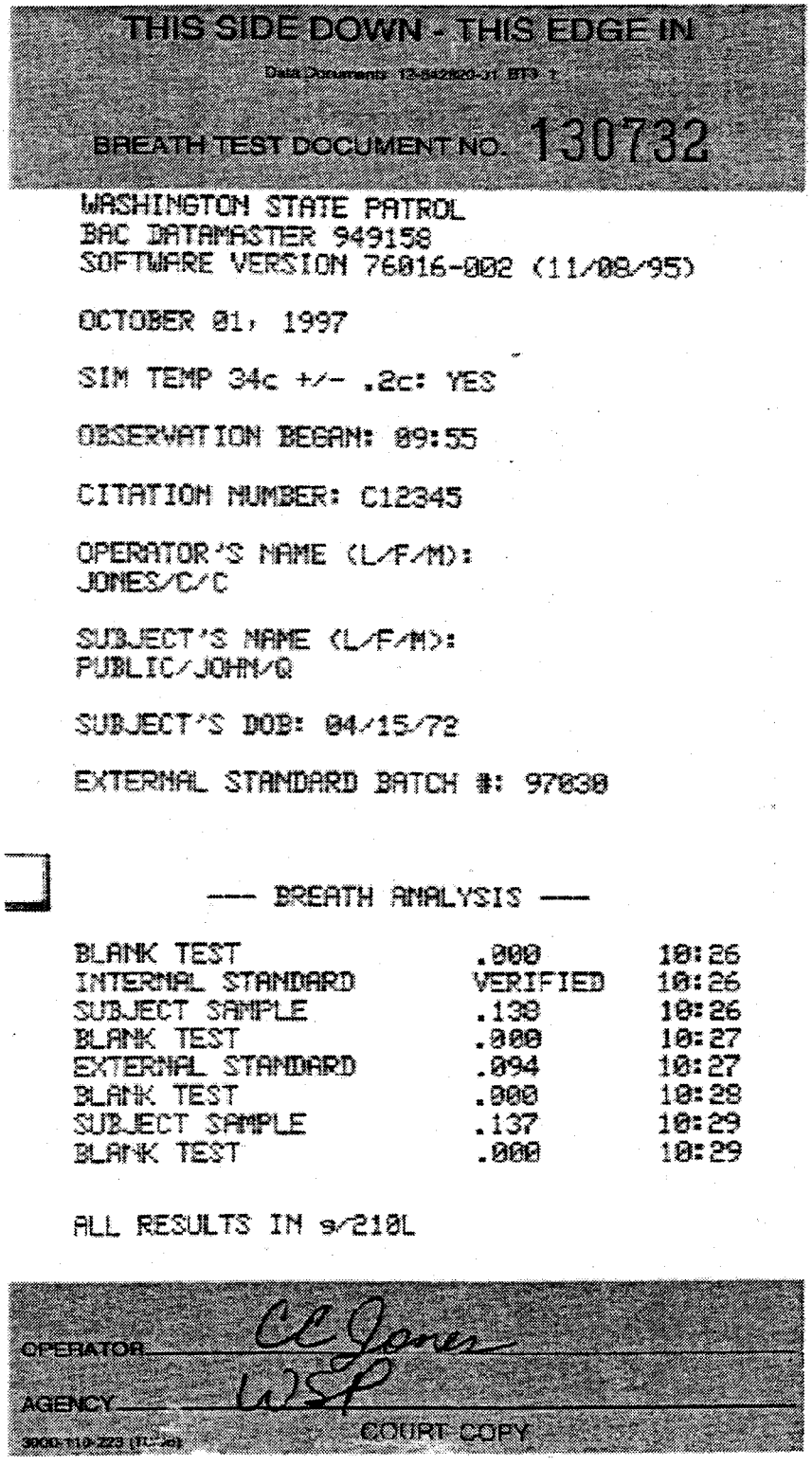
- ☞ The copy printed COURT COPY will go to the prosecutor/court.
- ☞ The copy printed ARRESTING OFFICER'S COPY will be retained by the arresting officer.
- ☞ The copy printed DEFENDANT'S COPY will be given to the subject.

If procedures for distribution within your jurisdiction are contrary to the above instructions, follow local procedure.

a. If the display reads "SAMPLES OUTSIDE 10%" after the second breath sample is analyzed, no ticket will be printed. The two breath samples given are not within +/- 10% of their average.

(1) Run another complete test, including two samples, to obtain a valid breath test. Strive for consistent breath samples.

Figure 7 - Sample of a Breath Test Document



THIS SIDE DOWN - THIS EDGE IN

BREATH TEST DOCUMENT NO. 130732

WASHINGTON STATE PATROL
BAC DATAMASTER 949158
SOFTWARE VERSION 76016-002 (11/08/95)

OCTOBER 01, 1997

SIM TEMP 34c +/- .2c: YES

OBSERVATION BEGAN: 09:55

CITATION NUMBER: C12345

OPERATOR'S NAME (L/F/M):
JONES/C/C

SUBJECT'S NAME (L/F/M):
PUBLIC/JOHN/Q

SUBJECT'S DOB: 04/15/72

EXTERNAL STANDARD BATCH #: 97030

--- BREATH ANALYSIS ---

BLANK TEST	.000	10:26
INTERNAL STANDARD	VERIFIED	10:26
SUBJECT SAMPLE	.130	10:26
BLANK TEST	.000	10:27
EXTERNAL STANDARD	.094	10:27
BLANK TEST	.000	10:28
SUBJECT SAMPLE	.137	10:29
BLANK TEST	.000	10:29

ALL RESULTS IN s/210L

OPERATOR C C Jones

AGENCY WSP

COURT COPY

ADDITIONAL GUIDELINES FOR OPERATORS

If any of the following messages appear on the DataMaster's display, refer to the appropriate instructions.

1. AMBIENT FAIL - Message appears when the instrument is unable to purge itself.

   a. Check for excessive room alcohol odor or chemical odors.
   b. Check that the breath tube is warm or hot to the touch, that there is no mouthpiece in the tube, and the tube is not laying behind the instrument by the exit port.
   c. Restart test by pushing RUN button; do not remove the evidence ticket from the lower slot.
   d. If message is displayed again:

      (1) Report repeated Ambient Fail to WSP radio supervisor.
      (2) Tag the instrument out of service.
      (3) Take the subject to another instrument for breath test.

2. SYSTEM WON'T ZERO - Message appears when instrument unable to zero.

   a. Check that the breath tube is warm or hot to the touch, that there is no mouthpiece in the tube, and the tube is not laying behind the instrument by the exit port.
   b. Restart test by pushing RUN button; do not remove the evidence ticket from the lower slot.
   c. If message is displayed again:

      (1) Report repeated System Won't Zero to WSP radio supervisor.
      (2) Tag the instrument out of service.
      (3) Take the subject to another instrument for breath test.

3. INVALID SAMPLE - Mouth alcohol is being detected, subject is not providing a proper sample, or the instrument is out of adjustment.

   a. Recheck the subject's mouth and have subject under direct observation for an additional 15 minutes. Enter the new observation time when you restart the breath test.
   b. Restart test by pushing RUN button; do not remove the evidence ticket from the lower slot.
   c. If message appears again:

      (1) If subject is blowing improperly (puffing, sucking back, etc.), restart test (recheck mouth and wait 15 minutes), making it clear to subject to blow properly or it will be a refusal.
      (2) Based on your assessment of the situation, decide whether to enter a refusal, an incomplete, or transport subject to another instrument.
      (3) Report repeated Invalid Samples to WSP radio supervisor.

4. RADIO INTERFERENCE - Radio Frequency Interference (RFI) is being detected.

   a. Determine and eliminate source of RFI (for example, hand-held radio transmitting).
   b. Restart test by pushing RUN button; do not remove evidence ticket from lower slot.
   c. If message persists:

      (1) Report repeated Radio Interference to WSP radio supervisor.
      (2) Tag instrument out of service.
      (3) Take the subject to another instrument for breath test.

5. PRINTER ERROR - Evidence ticket has jammed or printer has malfunctioned.

   a. If breath test document becomes jammed or is illegible:

      (1) Leave instrument on.
      (2) Do **NOT** push RUN button.
      (3) Tag instrument out of service.
      (4) Advise WSP radio supervisor immediately and the technician will retrieve the ticket.

6. CALIBRATION ERROR - Instrument calibration could not be verified.

   a. Restart test by pushing RUN button; do not remove the evidence ticket from the lower slot.
   b. If message is displayed again:

      (1) Report repeated Calibration Error to WSP radio supervisor.
      (2) Tag instrument out of service.
      (3) Take subject to another instrument for breath test.

7. If any of the following messages appear on the display, the instrument will not function:

   "FATAL SYSTEMS ERROR"
   "NOT CALIBRATED"
   "TEMPERATURE HIGH"
   "TEMPERATURE LOW"
   "PUMP ERROR"
   "RAM ERROR"

   a. Leave breath test document in the instrument and tag instrument out of service.
   b. Report the problem to WSP radio supervisor.
   c. Take subject to another instrument for breath test.

CHAPTER 4

DATA ENTRY

DATA ENTRY AND REVIEW PROCEDURES

The DataMaster will ask you 15 questions regarding your DUI arrest. Data entry codes for the answers to questions appearing on the display are kept by each DataMaster in a codebook. Use the keyboard to type in data (answers) to these questions. After each answer, press the return key to advance the display to the next question. Data entered by an operator is used by many state and county agencies; therefore, correct and complete data entry is important.

NOTE: As you type in each character (letter or number), you will hear a beep. If a disallowed character is typed, you will hear a louder beep and the character will not be displayed.

When you answer the last question (and press the return key), the display will ask "REVIEW DATA? <Y/N>" If you want to review the data, type Y for yes. The first question and answer will reappear. Pressing the return key advances the display to the next question. Correct any data that has been entered incorrectly.

The table below summarizes how to correct data (answers) to the 15 operator questions:

Table 2 - Summary of Data Correction

PRESS KEY(S)	ENTRY MODE	REVIEW MODE
BACKSPACE	ERASES ONE CHARACTER AT A TIME: MOVES CURSOR LEFT ONE SPACE	DOES NOT ERASE: MOVES CURSOR LEFT ONE SPACE AT A TIME
CONTROL & X	ERASES ENTIRE LINE: PUTS THE CURSOR AT THE START	DOES NOT FUNCTION
CONTROL & I	DOES NOT FUNCTION	DOES NOT ERASE: MOVES CURSOR RIGHT ONE SPACE AT A TIME
DELETE	DOES NOT FUNCTION	ERASES THE CHARACTER THE CURSOR IS ON: LEAVES NO SPACE

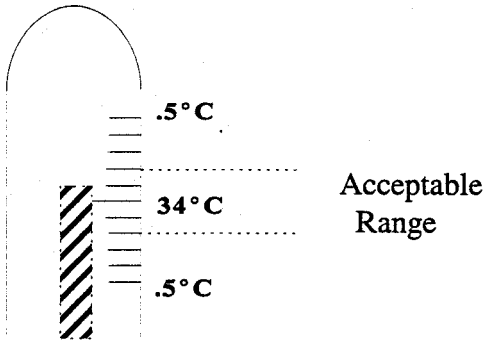
QUESTION 1

SIM TEMP **34c +/- .2c**?

When the above question is displayed on the DataMaster, check the simulator solution temperature.

When the temperature is between 33.8°C and 34.2°C, type "Y" for yes.

Press ENTER/RETURN key to continue.



If "N" is entered, the test will abort. Make sure the simulator switch is ON. If it is, then you cannot correct the temperature, move on to another instrument.

If the switch is OFF, turn it on and within 10-15 minutes the temperature should be rechecked. If the temperature is in the proper range, a test can then be run.

QUESTION 2

OBSERVATION BEGAN:

Enter the time you began the 15 minute direct observation of the subject.

Use the instrument clock and record in 24 hour time, 0000-2359.

Examples: 0300

1408

2318

The DataMaster will not accept less than a 15 minute observation time.

Press ENTER/RETURN key to continue.

QUESTION 3

CITATION NUMBER:

Enter the letters/numbers of the alcohol related citation issued to the subject.

If none issued or unknown, hit enter and continue.

Press ENTER/RETURN key to continue.

QUESTION 4

OPERATOR'S NAME (L/F/M):

NOTE: Operator is the operator of the DataMaster.

Forty characters are allotted. They may be

1. a letter
2. a slash (/)
3. a hyphen (-)

Type "last name/first name/middle initial"

Use hyphen only when part of your name. Use slash to separate names.

Examples: FURILLO/FRANK/J

DAVENPORT-FURILLO/JOYCE/A

Use the same name every time you run a test, such as the name you use to sign a citation.

Press ENTER/RETURN key to continue.

QUESTION 5

ARRESTING AGENCY:

Your agency has been assigned a seven digit code. The first three characters may be letters or numbers. The remaining four characters must be numeric.

Refer to codebook for agency codes.

Examples: WSP0805

USA1234

0140100

DJ12456

Code	Agency

Press ENTER/RETURN key to continue.

QUESTION 6

SUBJECT'S NAME (L/F/M):

Forty characters are allotted. They may be

1. a letter
2. a slash (/)
3. a hyphen (-)

Type "last name/first name/middle initial".

Enter full name as shown on driver's license.

Use hyphen only when part of their name. Use slash to separate names.

If none, use what you have or UNKNOWN.

Examples: BLOWS/JOE/E

MERTS-RICARDO/LUCILLE/S

UNKNOWN

Press ENTER/RETURN key to continue.

QUESTION 7

SUBJECT'S DOB: (mm/dd/yyyy)

Subject's date of birth.

Eight numbers must be entered; NO SLASH, it is already in place.

Examples: 01 24 1974

11 25 1914

08 08 2009

If DOB unknown type in eight zeros, 00 00 0000.

Press ENTER/RETURN key to continue.

QUESTION 8

SUBJECT'S SEX (M/F):

Must be M or F. M = Male F = Female

Press ENTER/RETURN key to continue.

QUESTION 9

SUBJECT'S ETHNIC GROUP:

One letter is allowed for the subject's race.

A = Asian

B = Black

I = Native American

W = White

U = Unknown

Press ENTER/RETURN key to continue.

QUESTION 10

D.L. STATE/NUMBER:

Two parts are divided by a slash. _____ / _____

1. State Abbreviation (Enter the two letter state code, the slash is already in place.)
2. Driver's License Number

For an * press the SHIFT-8 keys.
If unknown or none enter XX for the State and Press ENTER/RETURN key to continue.

Alabama	AL	Montana	MT
Alaska	AK	Nebraska	NE
Arizona	AZ	Nevada	NV
Arkansas	AR	New Mexico	NM
California	CA	New Jersey	NJ
Colorado	CO	New Hampshire	NH
Connecticut	CT	New York	NY
Delaware	DE	North Dakota	ND
Dist. of Columbia	DC	North Carolina	NC
Florida	FL	Ohio	OH
Georgia	GA	Oklahoma	OK
Hawaii	HI	Oregon	OR
Idaho	ID	Pennsylvania	PA
Illinois	IL	Rhode Island	RI
Indiana	IN	South Carolina	SC
Iowa	IA	South Dakota	SD
Kansas	KS	Tennessee	TN
Kentucky	KY	Texas	TX
Louisiana	LA	U.S.A.	US
Maine	ME	Utah	UT
Maryland	MD	Vermont	VT
Massachusetts	MA	Virginia	VA
Michigan	MI	Washington	WA
Minnesota	MN	West Virginia	WV
Mississippi	MS	Wisconsin	WI
Missouri	MO	Wyoming	WY

See next page for other territories, provinces, and countries.
Press ENTER/RETURN key to continue.

Territories and Canadian Provinces

Alberta	AB	Manitoba	MB
American Samoa	AM	Mariana Islands	MK
British Columbia	BC	Ontario	ON
Canal Zone	CZ	Prince Edward Island	PI
Guam	GU	Puerto Rico	PR
New Brunswick	NB	Quebec	PQ
Newfoundland	NF	Saskatchewan	SK
Northwest Territory	NT	Virgin Islands	VI
Nova Scotia	NS	Yukon Territory	YT
Wake Island	WK		

Additional Country Abbreviations

Australia	AS	Mexico	MM
Bahamas	BD	New Zealand	NZ
Brazil	BZ	Norway	NW
England	EN	Panama	PM
France	FN	Philippines	PI
Germany	GE	Saudi Arabia	SB
Italy	IT	South Vietnam	VS
Jamaica	JM	South Korea	KO
Japan	JA	Sweden	SQ
Korea	KR	Venezuela	VZ

OTHER ..... YY

QUESTION 11

COUNTY OF ARREST:

Enter the two digit County code found below.

01	Adams
02	Asotin
03	Benton
04	Chelan
05	Clallam
06	Clark
07	Columbia
08	Cowlitz
09	Douglas
10	Ferry
11	Franklin
12	Garfield
13	Grant
14	Grays Harbor
15	Island
16	Jefferson
17	King
18	Kitsap
19	Kittitas
20	Klickitat
21	Lewis
22	Lincoln
23	Mason
24	Okanogan
25	Pacific
26	Pend Oreille
27	Pierce
28	San Juan
29	Skagit
30	Skamania
31	Snohomish
32	Spokane
33	Stevens
34	Thurston
35	Wahkiakum
36	Walla Walla
37	Whatcom
38	Whitman
39	Yakima

Press ENTER/RETURN key to continue.

QUESTION 12

CRIME ARRESTED FOR:

Enter the two digit code found in the codebook at the DataMaster.

Examples:

01	DUI
02	PHYSICAL CONTROL
03	.02 MINOR LAW
04	COMMERCIAL DRIVER'S LICENSE
20	ADMINISTRATIVE PROCEDURE
30	OTHER
50	ASSAULT
51	DOMESTIC VIOLENCE

Press ENTER/RETURN key to continue.

QUESTION 13

ACCIDENT INVOLVED:

Enter "Y" or "N" only.

Type "Y" for Yes, if the subject was involved in an accident.

Type "N" for No, if the subject was not involved in an accident.

Press ENTER/RETURN key to continue.

QUESTION 14

DRINKING LOCATION:

The subject's drinking location has been assigned an eight character code.

The first character must be NUMERIC.

The second character must be ALPHA.

The last six must be NUMERIC.

Refer to codebook for drinking location codes. They are listed by county, then by business name.

If the subject will not give a specific location, attempt to find out if it was a bar, home, vehicle etc. and use its generic code.

Public Bar/Tavern	9A000001
Club (Elks, Moose, Etc.)	9A000002
Dining Establishment	9A000003
Banquet/Formal Party	9A000004
Private Home	9A000005
Pass/Commercial conveyance	9A000006
Private Conveyance	9A000007
Commercial Non Passenger	9A000008
Event-Sporting, Concert, Etc.	9A000009
Subject was drinking in Oregon	9A000020
Subject was drinking in Idaho	9A000030
Subject was drinking in Canada	9A000040
Other	9A000010
Unknown	9A999999

Press ENTER/RETURN key to continue.

QUESTION 15

SOLUTION BATCH #:

Enter the five digit number taped to the simulator, the external batch #.

Examples: 97046

96029

Press ENTER/RETURN key to continue.